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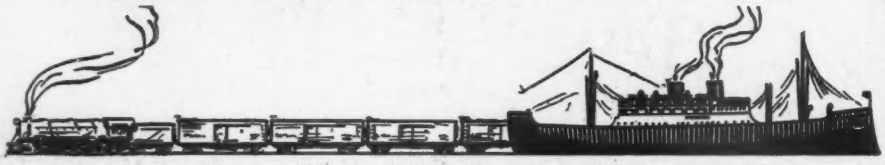

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See page 27

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AMERICAN FERTILIZER

"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

Vol. 101 NOVEMBER 18, 1944 No. 10

Limiting the Number of Grades of Commercial Fertilizer

By G. S. FRAPS

State Chemist of Texas; Chief, Division of Chemistry, Texas Agricultural Experiment Station

AGRICULTURAL workers in some states, have, for many years, been embarrassed by the large number of different grades of fertilizers offered for sale in their states. Attention has been called to this many times in many publications. In 1922–23, 167 different fertilizer mixtures were registered for sale in the State of Texas. On June 28, 1923, a meeting of fertilizer officials, Agricultural Experiment Station workers, representatives of the Extension Service, fertilizer manufacturers, and their advisers from Louisiana, Texas and Arkansas, considered this situation. They unanimously adopted a list of eleven grades of mixed fertilizer, for recommendation whenever possible. Their adoption did not exclude the recommendation of unmixed materials, such as superphosphate, nitrate of soda or ammonium sulphate, or the recommendation of other grades when necessary, but preference was to be given to recommending these grades as far as possible.

It was believed that these 11 grades would meet practically all needs for fertilizer mixtures in Texas. Their general adoption should reduce the number of mixtures now offered for sale, simplify the recommendations of Experiment Station and Extension workers, classify the problem of fertilizer to some extent, and, above all, reduce the cost of plant food to Texas farmers. All the recommended mixtures were high grade and their use would reduce the quantity of filler in fertilizer to a minimum and therefore their general use would result in lower costs of plant food to Texas farmers. (*Bulletin 312*, Texas Agricultural Experiment Station, 1923.)

Other states had adopted similar lists of grades, and this action in Texas is referred to chiefly because it is most familiar to the writer.

A circular was issued (*Circular 31*, 1923) containing information regarding the standard fertilizer formulas and their uses.

The manufacturers of fertilizer doing business in Texas, Louisiana and Arkansas in the fall of 1925 at a meeting in Shreveport, La., carried the matter a long step further by following the advice of Secretary of Commerce Hoover and reduced the number of those grades of fertilizer to be sold to about 21. This was considered to be the most progressive step that had been made in recent years. The grades included the standard grades recommended in 1923, with some additions (Texas Agricultural Experiment Station *Eulletin 246*, 1926). Since 1925, the fertilizer manufacturers doing business in Texas, Arkansas and Louisiana have met annually and with the advice and assistance of State Control officials, Agricultural Experiment Station workers, Extension workers and others interested, have adopted lists of grades of fertilizer. Oklahoma, Alabama, Mississippi and more recently North Carolina have also adopted limited lists of grades of fertilizers.

A fertilizer conference called by a group of editors of farm papers was held at Louisville, Ky., September 29 and 30, 1927. In addition to editors of farm papers, agronomists, State Fertilizer Control officials, representatives of the U. S. Department of Agriculture and representatives of the fertilizer industry were present. In addition to other resolutions, it was moved and carried that the conference commend the fertilizer industry for its good work in lowering the num-

ber of analyses and pledge itself to support the industry, in furthering its program of simplification. It was this meeting that took action which resulted in the uniform naming of grades of fertilizer throughout the United States, including the use of nitrogen in place of ammonia, the order of terms, and the use of the term "superphosphate" in place of "acid phosphate."

Since 1925, farmers of Texas, Louisiana and Arkansas have enjoyed the benefits of a limited number of grades of fertilizer, and Oklahoma, Mississippi, Alabama and North Carolina have also had these lists for shorter periods of time. In all this time, the writer has not known of any adverse criticism of the plan, but only commendation.

The War Production Board in M231, effective September 12, 1942, restricted the grades of fertilizer to a limited number in each state or region of the United States. The grades adopted were decided upon after conferences with Control officials, agronomists, agricultural chemists, other agricultural workers, representatives of the U. S. Department of Agriculture, Office of Price Administration, National Fertilizer Association, and War Production Board. The grades adopted were restricted to those which would allow the minimum practical amounts of filler, and which would use the quantities of plant food which could be secured to the best possible advantage. The grades adopted would conserve bags, labor, and transportation. War Food Administration order FPO rev. of July 1, 1943, and WFO rev. effective July 1, 1944, revised the lists of grades for subsequent years. Users of fertilizers, agricultural workers, agricultural editors and fertilizer manufacturers in all parts of the country desire a restricted number of grades. The greatest obstacle on the part of manufacturers to a limited number of grades has been unwillingness to discontinue grades which they had been selling for years. This obstacle has now been removed by three years of war grades. It remains to be seen if the advantages gained can be made permanent.

The greatest advantage of the limited number of grades to the user of fertilizers is reduction of filler to the lowest practical amount. Grades can be adopted which effect this result. The presence of filler in fertilizer has always been objected to by farmers, although many of them have highly exaggerated ideas as to the quantity present. The South Carolina fertilizer law requires a statement of the kind and quantity of filler present. A similar provision is included in a proposed National fertilizer law. These requirements are not practical. But the adoption of grades of fertilizers which can contain only limited amounts of filler seems to be the simplest and best solution to the filler problem. It must not be forgotten that some of the so-called filler may serve useful purposes. Some materials are added to produce and secure a good mechanical condition, and in other cases it furnishes magnesium needed in some states, or is used to produce a non-acid-forming fertilizer. Perhaps a better name in such cases would be "conditioner" instead of "filler."

Use of unnecessary quantities of filler increases the cost of manufacture per unit of plant food, the number of bags, and the cost of transportation, and thereby increases the cost of plant food both to the manufacturer and the user, without any corresponding advantages.

Another great advantage of a limited number of grades is the simplification of recommendations of fertilizers. Agronomists and other soil scientists have for years agreed that only a limited number of grades is necessary to meet the needs of a particular area. When the number of grades is limited, a good grade can be recommended which does not advertise a particular manufacturer, and which can be easily secured from several manufacturers.

One reason for the large number of grades in the past was the demand of certain dealers for grades of inferior quality which could be sold at a lower price than the superior grades of their competitors. This kind of competition was detrimental both to the industry and to the farmer.

Some methods should be agreed upon which will continue the use of restricted numbers of grades of fertilizer with all its benefits, after the war regulations have been discontinued. The limitation of the grades is of particular benefit to users of fertilizer, since, in addition to the benefits already pointed out, it aids in the selection of effective and economical grades of fertilizer for farm use.

Carvel Elected Lieutenant Governor of Delaware

In the election on November 7th, Elbert N. Carvel was elected Lieutenant Governor of the State of Delaware. Mr. Carvel is treasurer and general manager of the Valliant Fertilizer Company, Laurel, Del.

Ammonium Nitrate Fertilizers from Government Ammonia

By N. Titlestad

Chemical Consultant, New York, N. Y.

THE various government ammonia factories erected in this country during the last few years have increased the capacity of the United States for producing chemical nitrogen substantially above one million short tons per year. Before the war, the annual consumption of chemical nitrogen in this country, both for agricultural and for industrial purposes, amounted only to about 500,000 tons. This raises the question as to whether there will be an outlet after the war for all the newly built producing facilities.

Although it can safely be assumed that the postwar demand for both fertilizer and industrial nitrogen will be a good deal higher than it was before the war, the large excess of the present productive capacity over the prewar consumption makes it certain that the problem of finding a market for the output of the new government plants will be solved only if these plants, which are now geared for war production only, will be devoted to the manufacture of the right peacetime products.

At present the government plants are, as a rule, equipped to produce only anhydrous ammonia, nitric acid and ammonium nitrate in solution. Since most of these plants are, because of strategic considerations, located in regions remote from the principal manufacturing industries of the country, the possibilities of using for industrial purposes a substantial part of the nitrogen to be produced at the government plants are distinctly limited.

A similar situation exists with respect to the possibility of using this nitrogen in the form of anhydrous ammonia, aqueous ammonia or ammonium nitrate solutions for making fertilizer mixtures. The amount of solutions which can be used in fertilizer mixtures is relatively small and limited, not only on account of the water content of the solutions but also due to reversion of soluble P_2O_5 in the mixture when excessive amounts of ammonia are added. The amount of superphosphate available in a district, therefore. automatically sets a definite limit on the amount of solutions which can be marketed,

The use of nitrogen solutions for direct application to crops has not been developed to any extent for various reasons and it is therefore obvious to seek the principal outlet for the postwar production of the government ammonia factories in solid ammonium nitrate to be used as fertilizer.

Advantages of Ammonium Nitrate

It has long been known that solid ammonium nitrate, which contains in pure form 35 per cent N, is an excellent fertilizer material, both for use in mixtures and for direct application. It is adapted to a wide range of crops, soils and climatic conditions; it gives a quick response; it is more resistant to leaching than nitrate of soda, the ammonia half of the nitrogen in ammonium nitrate being definitely resistant to leaching; and it leaves an acid residue in the soil which, from equal quantities of nitrogen, is only one-third as large as that left from sulphate of ammonia.

With all these and many other excellent qualities, ammonium nitrate has several serious disadvantages unless it is specially treated. It is explosive, and in storage is therefore subject to insurance rates so high as to prohibit the use of general purpose warehouses and to require special "nitre houses." Furthermore, it is exceedingly hygroscopic and apt to cement into hard lumps or solid blocks that are difficult to break up with hammers or clod breakers. These properties make an extensive use of pure solid ammonium nitrate as fertilizer almost impossible.

During the last year or two, many attempts have been made at eliminating these objectionable features. Due to the high hygroscopcity of pure ammonium nitrate, the presence of large amounts of "fines" in the product has a tendency to accelerate caking and i. readily suggested itself, therefore, either

to develop large crystals or to pellet an ammonium nitrate melt. For the first one of these tasks a well-known, originally Norwegian process ("Krystal Process") was tried on a pilot scale. This process, as well as the several pelleting methods employed, yielded particles of sufficient size and uniformity. Unfortunately, these particles also cake during storage, which defect cannot be overcome through merely dusting the particles with inert materials, such as limestone.

The "PRP plus K" Treatment

During the investigations it was found that a noteworthy reduction of the caking properties is obtained when the ammonium nitrate pellets are treated, first, with a mixture of equal parts of paraffin, rosin and petrolatum and, secondly, with Kieselguhr (Dicalite, Kittitas, etc.). This treatment is usually designated as the "PRP plus K method" and yields the best results in those cases where 1 per cent of the paraffin-rosin-petrolatum mixture and 4 per cent Kieselguhr are employed.

Even ammonium nitrate treated by the PRP plus K method has to be shipped, however, in good, asphalt-laminated paper bags closed by sewing and gluing. Long storage of the product has to be avoided, at least during the summer or early fall months, and the contents of each bag which has been opened must be used immediately.

Furthermore, the PRP plus K method apparently leaves the ammonium nitrate as much exposed to fire and explosion as it originally was. The introduction of the organic compounds, paraffin and petrolatum, may even intensify the explosion hazard connected with ammonium nitrate rather than reduce this hazard.

Most of the research work discussed in the preceding text has been carried on by the Division of Soil and Fertilizer Investigations in the Agricultural Research Administration at Beltsville, Md., in cooperation with a number of private companies in this country and some Canadian agencies.

The reports published by the Division of Soil and Fertilizer Investigations[1] describe in detail the various conditioning methods employed and the results obtained with them but fail to cover specifically one generally recognized method of treating ammonium nitrate. It consists of adding powdered limestone or dolomite to an ammonium nitrate melt and then pelleting the combined product. Because large quantities of ammonium nitrate treated by this method have for many years been sold in the United States under the trade name "Cal-Nitro," the method will in the subsequent text be designated by the name "Cal-Nitro Process." The product is also being sold in the United States under the name of "ANL" and abroad under various names, the best known being "Nitro-Chalk." The author understands that, due to its well-known properties, the product has been used in the development work as a standard.

The Cal-Nitro Process

The research report published by the Division of Soil and Fertilizer Investigations on September 8, 1943, incidentally mentions the Cal-Nitro process by saying (on page 6):

"Limestone, dolomite and rock phosphate containing calcium carbonate are not satisfactory conditioning agents. These materials react with ammonium nitrate with slight loss of ammonia as indicated by laboratory experiments, observations in plants and the presence of free ammonia in shipments of nitrate conditioned with limestone."

This statement hardly does justice to the Cal-Nitro process. For although during the manufacture of Cal-Nitro a small amount (less than 0.1 per cent) of ammonia is liberated and lost, the method yields a satisfactory product. This follows from the fact that, during many years before the war, bulk Cal-Nitro was shipped during every season of the year from Europe to ports in the South Atlantic or Gulf States and from there was shipped, again in bulk, to fertilizer factories, where it was stored in bulk until used in mixing. At the same time, large quantities of the product were continuously sold, in paper-lined burlap bags, to farmers who applied the material to crops without in any way being troubled by caking or lumping.

The Cal-Nitro process, which is being used by an important producer of nitrogen in this country, overcomes adequately also the fire and explosion hazard, as can be seen from a special report by Underwriters' Laboratories, Inc.,[2] and from the fact that in March, 1944, the Bureau of Mines freed parties dealing in the product or transshipping it from the

[1] See the *Report* of September 8, 1943, "The Preparation of Ammonium Nitrate for Use as a Fertilizer," and *Research Reports* Nos. 19 and 26 of April 10, 1944, and July 6, 1944, entitled respectively, "Practical Long-Period Storage of Conditioned Ammonium Nitrate" and "Storage Experiments with Variously Conditioned Ammonium Nitrate Fertilizers."

[2] See Underwriters' Laboratories *Bulletin of Research*, No. 20, December, 1940, "Fire and Explosion Hazards of Ammonium Nitrate Fertilizer Bases."

(Continued on page 28)

Phosphate Rock in the First Half of 1944

Total mine production of phosphate rock in the first half of 1944, according to reports of producers to the Bureau of Mines, United States Department of the Interior, was over a quarter of a million tons greater than in the similar period of 1943, reaching 2,851,561 long tons. Phosphate rock sold or used in the first half of 1944, 2,682,601 tons, was over 300,000 tons greater than the corresponding period of 1943, and the value, $10,183,358, was more than a million and a half dollars greater. The average value of phosphate rock sold or used increased from $3.67 in the first half of 1943 to $3.80 in the similar period of 1944, increases being shown in nearly all classes of rock. Total stocks in producers' hands decreased, owing largely to the marked decline in Florida stocks.

In the first half of 1944, phosphate rock was mined in Florida, Tennessee, Idaho, and Montana, and apatite in Virginia. Florida, as usual, was the leading shipper, its marketed production being over three times that of Tennessee, its nearest competitor. Shipments of Florida land pebble and soft rock increased, but those of hard rock declined. The average values of land pebble and hard rock increased, the latter considerably. The average reported value of soft rock declined slightly. Total values of shipments of land pebble and soft rock were greater in the first six months of 1944 than in the similar period of 1943, but that of hard rock was less. The quantity of Tennessee rock sold or used in the first half of 1944 was considerably less than in the corresponding period of 1943, but a slight increase was shown in the total value. Idaho showed a decrease in the quantity of phosphate rock sold or used in the first six months of 1944 over the January to June period of 1943, with an increase in both average and total values. Montana shipments in the first six months of 1944 were more than double those of the corresponding period of 1943, with increases in total and average values.

	1943			1944			
	Long Tons	Value at Mines		Long Tons		Value at Mines	
		Total	Average	Phosphate Rock	P_2O_5 Content	Total	Average
Production (mined)	2,581,795	[1]	[1]	2,851,561	861,429	[1]	[1]
Sold or used by producers:							
Florida:							
Land pebble	1,590,418	$5,204,696	$3.27	1,876,080	630,948	$ 6,434,749	$3.43
Soft rock	24,814	115,219	4.64	34,705	7,317	157,368	4.53
Hard rock	15,328	85,387	5.57	12,830	4,632	82,718	6.45
Total, Florida	1,630,560	5,405,302	3.31	1,923,615	642,897	6,674,835	3.47
Tennessee[2] [3]	636,321	2,854,912	4.49	620,584	166,139	2,872,425	4.63
Idaho	60,204	282,151	4.69	58,163	18,629	302,969	5.21
Montana	32,530	125,607	3.86	80,239	25,610	333,129	4.15
Virginia	[3]	[3]	[3]	[3]	[3]	[3]	[3]
Total, United States	2,359,615	8,667,972	3.67	2,682,601	853,275	$10,183,358	$3.80
Stocks in producers' hands, June 30:							
Florida	1,400,000	[1]	[1]	881,000	293,000	[1]	[1]
Tennessee[2] [3]	545,000	[1]	[1]	[4] 405,000	103,000	[1]	[1]
Other	2,000	[1]	[1]	5,000	2,000	[1]	[1]
Total Stocks	1,947,000	[1]	[1]	[4]1,291,000	398,000	[1]	[1]

[1] Figures not available.
[2] Virginia included with Tennessee.
[3] Includes brown-rock matrix of sinter grade and sintered brown rock.
[4] Does not include plant stocks of washer-grade matrix.

WFA Announces 1945 Production Program

The 1945 national production program, suggesting about the same total crop acreage as was planted this year, to be submitted to State agricultural leaders for their determination of State goals at meetings beginning November 20th, was announced on November 15th by War Food Administrator Marvin Jones.

"The food production job for next year will be as important to the war and to the peace as it was in 1944," War Food Administrator Marvin Jones said. "Some shifts in the pattern of production will be needed in line with changing demand situations, but the total needs will continue to be great. We must make certain that we have plenty for our armed forces, for civilians, for our Allies and for relief needs.

"To allow a margin of safety in case of adverse weather, and to assure maintenance of our reserve stocks, we will need to plant about the same total acreage as in 1944. We cannot risk the possibility of a shortage. We are planning to have enough in total, with full consideration for all factors, and we know we can count on farmers and ranchers to meet the necessary goals."

Suggested total crop acreages for 1945, although smaller than the goals for 1944, amount to nearly 364 million acres, as compared with an estimated 360 million planted acres in 1944. The individual goals provide a continuance of 1944 levels for most of the more important crops. Goals are somewhat below 1944 plantings for some crops and somewhat above 1944 in a few cases where prospective demand still requires adjustments upward.

A series of State meetings, at which local farm representatives and agricultural leaders will determine the State goals, will be held during the period November 20th to December 15th. Representatives of the War Food Administration will be present at the meetings to discuss questions of production, marketing, price support, materials and facilities and other factors related to the 1945 production program.

After the States have determined their individual production goals, the War Food Administration will announce the resulting National totals. If the demand situation changes materially before planting time, WFA will suggest desirable modifications in State and National goal levels.

The suggested national goals for crops are listed in the following table:

CROP GOALS:
1945 ACREAGE WITH COMPARISONS

Commodity	Planted Acreage (Thousands) 1935–39 Average	1944 Indicated	1945 Goal
Food and Fiber Crops			
Wheat	73,235	66,705	67,640
Rye[1]	3,699	2,325	2,515
Rice	1,007	1,490	1,400
Dry Beans	1,917	2,340	2,340
Dry Peas	281	746	457
Soybeans for Beans[1]	3,042	10,688	10,688
Flaxseed	1,938	3,285	5,000
Peanuts, grown alone	2,173	4,169	4,000
Peanuts, picked and threshed[1]	.....	(3,434)	(3,300)
Cotton	28,496	20,472	20,472
Broomcorn	317	372	370
Sugar Beets	892	646	951
Sugar Cane (except sirup)[1]	287	304	337
Potatoes	3,123	3,084	3,100
Sweet Potatoes	804	829	829
Truck Crops:			
Fresh[1]	1,745	1,852	1,683
Processing	1,383	2,086	2,010
Tobacco:			
Flue-cured	981	989	1,023
Burley	371	470	480
Other Domestic	292	227	264
Subtotal — Food and Fibers	125,983	123,079	125,559
Corn	97,055	99,606	99,606
Oats	40,586	44,023	44,023
Barley	13,364	14,483	14,483
All Sorghums (except sirup)	15,029	17,752	16,740
Subtotal—Feed Crops	166,034	175,864	174,852
Cultivated Crops	292,017	298,943	300,411
Hay and Hay Seeds[1]			
All Tame Hay	55,770	60,427	62,838
Hay Seeds—Legume[2]	2,735	4,394	4,746
Cover Crop Seeds[3]	120	340	469
Subtotal — Hay and Hay Seeds	58,625	65,161	68,053
Grand Total — Crop Acreage[4]	347,907	359,710	363,718

[1] Harvested.

[2] Includes alfalfa, red, alsike, sweet and Ladino clover, and Lespedeza.

[3] Includes hairy vetch, common and Willamette vetch, Austrian winter peas, crimson clover, common ryegrass

[4] Excluding hay seeds.

IT MAY BE

By SAMUEL L. VEITCH

In some states, mostly southern, AAA payments may have to be trimmed because of high participation in soil conservation. AAA Act permits payments to farmers to go 10 per cent up or down, depending on participation, to fit into budgets (appropriation 300 million).

AAA has checked and found that any percentage cuts will come within the 10 per cent, but there was talk, which should not be overlooked, that southern Congressmen would move for a deficiency appropriation to "pay farmers all they earned."

Cotton

The administration is experimenting now with cotton and wheat exports subsidized down to world price, but for a longer time, overall policy. Keep your eye on cotton—it may be the barometer. The reason being, the solid South forms a natural cotton bloc; cotton is the toughest surplus problem; cotton made the bulk of prewar farm exports.

The House postwar farm planning group under Pace (D-Ga.) has scheduled cotton on its hearing agenda December 4th, and has invited testimony from growers, the trade and administration officials. Cotton circles are stirring with schemes. What happens to cotton is likely to cue action on other surplus export crops.

It may be, imports of cotton from India and Peru will be permitted during the remaining part of this year. This would be the first since the war began. An estimated 3,000 tons of Karachi and 750 tons of Peruvian Pima will come in to meet special mill requirements.

Crop Goals

WFA production officials this week placed before Marvin Jones proposed 1945 food production goals calling for a total planted acreage of 163,800,000. This is an increase of 3,000,000 acres over 1944 plantings but 17,000,000 acres under 1944 goals.

Recent WFA statements favoring unrelaxed production efforts indicated Jones will approve. State AAA chairmen will meet to draft state goals between November 20th, and December 15th, permitting national acreage announcement by January 1st.

The biggest suggested increase is for sugar beets. Farmers will be asked to boost this year's 646,000 beet acres by 50 per cent. Corn acreage will be almost identical with this year's 99,600,000 acres.

Oats and barley will be same as this year, grain sorghums a million acres lower and cotton up fractionally. Some increase in tobacco. Hay and flax acreage upped from 3,200,000 to 4,000,000 acres.

Sweet Potatoes

Sweet potato loan program will get under way November 15th, two weeks earlier than last year, otherwise there is no change.

Tobacco

Tobacco industry representatives had a get-together with War Food officials on November 9th, to talk over the 1945 program.

War Surplus Materials

You may want to take advantage of the new publication now being printed called *Surplus Reporter*. It gives a list of large consumer surplus goods under control of all U. S. Treasury's Regional Procurement Offices. There is no charge for this publication, all you have to do is write your nearest Treasury Procurement Office.

The Government Printing Office is also publishing *Buyers' Guide for Surplus Property*. This can be had by sending 10 cents to the Government Printing Office, Washington 25, D. C.

Congress

It may be Congress will do a bit of coasting for the next few weeks to come. Just pussyfoot until after January 3rd, when the newly-elected Congress takes over. However, one issue that no doubt will be voted on is the Government insurance to pay farmers for crop damage.

Strikes and More of Them

It may be the Little Steel formula will be opened; increases in wages will be given, but regardless of this, there will be a number of strikes, as the labor leaders feel the President has not kept faith and the administration is not duly appreciative of the part labor played in the election.

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Vol. 101 **NOVEMBER 18, 1944** **No. 10**

Principal Articles in This Issue

Tung-Oil Pomace as Nitrogen Fertilizer

Fertilizer manufacturers have found it difficult to get cottonseed meal for use in tobacco fertilizers because of Government allocation of the material to feed channels. The insistence of tobacco growers on cottonseed meal as a major source of nitrogen in their fertilizers is founded not only on their own experience but the results of agricultural experiment stations.

Another source of organic nitrogen that has proven comparable to cottonseed meal for tobacco has been announced by the Coastal Plain Experiment Station at Tifton, Ga. It is tung meal, the pomace of the tung-oil nut.

Tung trees are grown extensively in Florida and in the gulf regions of other southern States, primarily for the oil that is expressed from the nuts. Tung oil is valued particularly for its quick drying properties and formerly came largely from China. Experiments carried out in Florida demonstrated that the tung tree could be grown successfully in this country and for the past twenty-five years tung orchards have gradually spread in the lower South.

Unlike cottonseed meal, tung meal is not edible and its use is therefore largely restricted to fertilizer.

The Coastal Plain Experiment Station has tested tung-oil pomace as a source of nitrogen for shade tobacco for five years, comparing it with whale guano, soybean meal, castor pomace, peanut meal and cottonseed meal. Each of these materials was used as a single source of nitrogen in a complete fertilizer. The average yield of each material for the five-year period is as follows:

	Pounds
Tung-oil Pomace	1,153
Whale guano	1,118
Soybean meal	1,053
Castor Pomace	1,091
Peanut meal	1,067
Cottonseed meal	1,146

Quality of the leaf is, of course, important in tobacco. In *Bulletin 39* of the Coastal Plain Experiment Station, in which the results are published, the authors say: "Cottonseed meal is slightly superior to tung-oil pomace in producing grade quality. The fire-holding capacity and ash colors obtained by these two treatments are satisfactory and since yields and crop indices are high, it would be concluded that cottonseed meal and

tung-oil pomace are superior to materials tested as single sources of nitrogen."

Conclusions drawn from various forms and combinations of nitrogen lead the authors to conclude that the optimum amount of nitrogen for shade tobacco is 200 pounds. Lower rates may not be sufficient and higher rates "prevent a good stand of plants, hinder early growth, and reduce yields."

Not all the nitrogen in a tobacco fertilizer need come from organic sources. The bulletin says: "Results from various combinations of nitrogen used in these tests show that 75 per cent of the total nitrogen from cottonseed meal plus 25 per cent nitrate nitrogen gave better results than nitrogen derived solely from cottonseed meal.

"Tung-oil pomace and stable manure, as shown by the tests, are excellent substitutes for cottonseed meal. Tung-oil pomace can be used as the single nitrogen source while manure can be used at rates from 6 to 12 tons per acre and supplemented by additional nitrogen."

Less Nitrogen for Fertilizers

Less nitrogen will be available during the next calendar year for use on American farms because of increased Ordnance programs, Chemicals Bureau officials told the Nitrogen Producers Industry Advisory Committee at a recent meeting, the War Production Board reported on November 6th. The committee discussed modifications of existing nitrogen allocation orders, as proposed by the Chemicals Bureau.

At the start of the fertilizer year beginning July 1, 1944, WPB officials estimated that 631,000 tons of nitrogen would be available for agriculture. However, in view of new military requirements, the estimate had to be revised downwards in September to 530,000 tons, WPB said.

In an effort to compensate for this loss, WPB arranged for a higher shipping priority for some Chilean nitrate of soda, which had previously been assigned a low priority. This brought the anticipated agricultural supply of nitrogen to 586,000 tons.

Because of military requirements for grained ammonium nitrate that had not been anticipated, it was necessary to make an additional cutback in agricultural supplies, reducing the previous estimate to 576,000 tons.

Production difficulties by Canadian manufacturers, which prevented them from attaining estimated production goals, may cause further reductions in agricultural nitrogen, WPB told the Committee. It is hoped that the reduction will not exceed 5,000 tons of nitrogen.

As suggested by WPB, the revised nitrogen order would permit the lifting of allocation restrictions from nitrogen compounds for both agricultural and industrial use. However, to insure supplies for the military, controls would be maintained on the amounts that producers of nitrogen could sell for industrial, agricultural, and other uses.

The Committee was unanimously of the opinion that the proposed revision of allocation procedure was workable. However, opinion was divided on the desirability of any change at all in the existing allocation procedure.

September Sulphate of Ammonia

The figures of the U. S. Bureau of Mines show a decrease of 4.5 per cent in the production of by-product coke during September and exactly the same per cent of decrease in sulphate of ammonia output, which dropped from 68,576 tons in August to 65,484 tons in September. Sales during the month increased to 67,629 tons and therefore the supply on hand at the end of the month showed a drop to 77,341 tons. This is over twice as much as was on hand at the end of September, 1943.

During the first three weeks of October, it is estimated that production of by-product sulphate of ammonia and ammonia liquor (figured in terms of sulphate of ammonia) amounted to 58,183 tons, which would represent an increase in daily production rate of about 6 per cent over September.

	Sulphate of Ammonia Tons	Ammonia Liquor Tons NH
Production		
September, 1944	65,484	2,631
August, 1944	68,576	2,664
September, 1943	64,956	2,804
January-September, 1944	609,099	23,859
January-September, 1943	594,214	25,541
Sales		
September, 1944	67,629	2,465
August, 1944	64,458	2,537
September, 1943	69,107	2,988
Stocks on Hand		
September 30, 1944	77,341	637
August 31, 1944	79,962	631
September 30, 1943	38,192	1,015
August 31, 1943	42,407	1,028

October Tax Tag Sales

Fertilizer tax tag sales in October in the 17 reporting States represented a total of 283,000 tons, compared with 368,000 tons a year ago and 222,000 tons two years ago. Sales in October, 1943, were abnormally large as a result of the early buying of tags for use in 1944. With the exception of last year, sales in October, 1944, were substantially above sales in any preceding October. In the five years from 1937 through 1941, October sales averaged 175,000 tons.

Sales in the July-October period, the first four months of the fertilizer year, were at about the same level as last year, and were considerably above the corresponding period of earlier years, as shown by the following figures:

1937	598,000	1941	635,000
1938	541,000	1942	749,000
1939	639,000	1943	1,102,000
1940	651,000	1944	1,105,000

Total sales in the first ten months of this year under-ran the January-October, 1943, sales by 72,000 tons, but were 834,000 tons above 1942. Seven of the 12 southern States reported smaller sales this year than last. Arkansas was the only State in the region to report a decline also from 1942. A drop from last year in Indiana was more than offset in the Midwest by much larger sales in the four other States in that region.

FERTILIZER TAX TAG SALES

State	October				January–October		
	1944 Tons	1943 Tons	1942 Tons	% 1943	1944 Tons	1943 Tons	1942 Tons
Virginia	31,498	34,466	21,299	103	449,646	434,731	395,538
North Carolina	30,585	61,304	30,496	94	1,120,304	1,194,865	1,106,760
South Carolina	22,670	42,440	17,770	87	657,793	758,223	639,964
Georgia	36,794	42,234	27,843	98	920,463	936,737	775,311
Florida	68,821	91,000	57,501	112	706,655	629,205	510,639
Alabama	16,500	12,100	4,500	91	588,350	643,800	564,200
Mississippi	15,750	35,670	12,590	80	337,564	423,214	304,619
Tennessee	17,852	13,913	13,443	113	247,371	219,266	173,186
Arkansas	2,500	4,430	.....	67	110,583	165,705	133,158
Louisiana	2,375	4,680	12,730	111	203,295	183,368	155,716
Texas	8,365	8,200	1,990	109	169,043	155,150	119,284
Oklahoma	500	500	.....	96	17,351	18,088	8,747
Total South	254,210	350,937	200,162	96	5,528,418	5,762,352	4,887,122
Indiana	5,896	3,800	10,923	88	339,443	383,790	396,027
Illinois	13,200	4,087	1,893	174	153,090	88,180	80,089
Kentucky	6,710	7,500	7,735	148	229,709	154,706	144,087
Missouri	2,399	1,515	873	151	135,001	89,561	70,797
Kansas	200	75	50	232	37,696	16,279	11,415
Total Midwest	28,405	16,977	21,474	122	894,939	732,516	702,415
Grand Total	282,615	367,914	221,636	99	6,423,357	6,494,868	5,589,537

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FERTILIZER MATERIALS MARKET

NEW YORK

Increased Ordnance Demands Reduce Nitrogen Supply for Agriculture. Sulphate of Ammonia Supply Not Increasing. Potash Deliveries Adequate with Possibility of End of Allocation in Near Future.

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, November 14, 1944.

Nitrogen

As indicated from time to time, it is now evident that considerably less nitrogen will be available for fertilizer manufacturers during next season than previously, due to increased use of this material in the manufacture of munitions. Indications point to even larger demand by Ordnance, so there may be further curtailment over what is now expected.

Sulphate of Ammonia

Recent additional allocations of sulphate of ammonia have been sufficient to keep stocks down and with possibility of fairly large exports, there is no expectation that stocks will be built up.

Nitrate of Soda

It is expected that some additional nitrate might be imported.

Superphosphate

Demand continues and the supply situation is extremely tight. Regular consumers are getting deliveries against contracts.

Potash

Production continues and deliveries are being made fully in line with allocations. There is undoubtedly additional demand for muriate above the quantities allocated, with some buyers attempting to line up additional material in case allocation is discontinued by WPB after January 1st, as has been intimated as a possibility.

Phosphate Rock

Heavy deliveries are continuing and there seems to be sufficient material available.

Sulphur

In spite of tremendous demand, production of this material has been sufficient to keep supply ample and movements are being made regularly.

BALTIMORE

Little Change in Fertilizer Situation. Feed Market Taking Almost All Organics. Prices Remain at Ceiling Levels.

Exclusive Correspondence to "The American Fertilizer"

BALTIMORE, NOVEMBER 15, 1944.

During the past two weeks, conditions in the fertilizer industry have remained about the same, with nothing of particular interest taking place. The market on materials is also very quiet.

Ammoniates.—Tankage and blood are still the same and importations of blood that were reported went to the feeding trade. Ceiling prices are still quoted on the domestic product, but very little interest is shown by the fertilizer trade.

Castor Pomace.—The position on this commodity is still very tight, although some interest is being shown by fertilizer manufacturers for the early months of next year.

Fish Scrap.—There are no stocks on hand as this material was sold as fast as produced while fishing was in progress on the Chesapeake Bay, and then practically all for feeding purposes.

Sulphate of Ammonia.—There is no change in the position of this material, deliveries still being made under allocation at ceiling price.

Nitrate of Soda.—This material is still being allocated under governmental supervision. There has been no change in price with the exception of 50 cents per ton mark-up being allowed on material taken by trucks, effective November 16th.

Superphosphate.—Ceiling price of 65 cents per unit for run-of-pile is still in effect, with producers not taking on any new business. The situation is still very tight.

Potash.—No change in conditions since last report, producers of the domestic product being practically sold up.

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Bone Meal.—Offerings of both raw and steamed bone meal are still very limited, and what material is available is going into the manufacture of feed.

Bags.—No change since last report and ceiling prices are still in effect.

CHICAGO

Fertilizer Organics Market Quiet Due to Lack of Offerings. Feed Market Unchanged with Prices Firm.

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, November 13, 1944.

Quietness continues to dominate in the local organic market, which the trade realizes is attributive to the light offerings. While some material has been booked for November and December deliveries, the total quantity is not nearly sufficient to meet actual requirements.

In feeds, the market remains unchanged at this period. Except in certain unfavorable freight situations, prices are held fairly close to ceilings.

Ceiling prices are:

High grade ground fertilizer tankage, $3.85 to $4.00 ($4.68 to $4.86 per unit N) and 10 cents; standard grades crushed feeding tankage, $5.53 per unit ammonia ($6.72 per unit N); blood, $5.53 ($6.72 per unit N); dry rendered tankage, $1.25 per unit of protein, f. o. b. producing points.

CHARLESTON

Ordnance Requirements Cut Nitrogen Available for the Coming Season. Greater Imports of Nitrate of Soda Desired.

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, November 15, 1944.

Organics.—Offerings on these of any type continue exceedingly scarce.

Ammonium Nitrate. — The Government plants are still not able to make any fertilizer ammonium nitrate on account of the demand from the Ordnance Department. It has now become evident that less nitrogen can be secured during the present season than last year. Several months ago it was hoped that around 630,000 tons would be available for agriculture but now this estimate has been cut down to 530,000 tons.

Sulphate of Ammonia.—The September production was nearly 5 per cent lower than that of August. Fertilizer manufacturers, on account of the general situation on nitrogen, are taking it just as quickly as it is possible for them to secure it.

Nitrate of Soda.—It is now hoped that approximately 800,000 tons Chilean nitrate can be imported during the present season.

Superphosphate.—No improvement on this material. Supply continues very tight.

TENNESSEE PHOSPHATE

Summer Drought Cuts Corn Crop to Low Levels. Rock Shipments Continue to Limits of Equipment and Manpower.

Exclusive Correspondence to "The American Fertilizer"

COLUMBIA, TENN., November 13, 1944.

Many of the corn crops that in July looked like seventy-five bushels per acre are actually yielding abaut twenty-five, because of the failure to get moisture at the right time. Although corn planting time last spring varied all the way from April through June, none of it hit the right spot to make the 100-bushel crops this soil ought to produce.

Shipments of phosphate rock continue into all consuming channels in as large a volume as the manpower shortage permits, but so greatly has the demand increased in every line, that this volume is utterly inadequate to supply the orders which continue to pile up on all producers.

There will undoubtedly be significant in-

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creases of grinding, bagging and loading equipment whenever WPB permission can be had for new construction and also whenever manpower can be had to operate even the present installations.

Limited use of German war prisoners from the Lawrenceburg camp was begun last week by one phosphate company, in spite of the refusal of Fourth Corps Area to provide pay for transportation for the twenty miles from camp to work. They can be worked only on outside work, such as track building and moving and road building.

California Fertilizer Association Annual Meeting

"The Fertilizer Industry Postwar" was the general topic of the 21st annual meeting of the California Association held at the Biltmore Hotel in Los Angeles, November 9th, 10th and 11th. Attendance was the largest of any meeting yet held, numbering 125.

The forenoon meeting on November 9th was devoted to the program of the Bureau of Chemistry of California, and Dr. Alvin J. Cox, chief of the Bureau, presided. He made an interesting report for the year, which was followed by discussions on industrial organic wastes on orchards and vineyards by Dr. E. L. Proebsting, professor of pomology at the University; and Dr. John P. Conrad, professor of agronomy, on problems in fertilization of field crops. Allen Lemmon of the Bureau presented an interesting colored film entitled, "Regulatory Chemistry for Better Citrus Production."

At the luncheon session Dr. Robert W. Hodgson, professor of subtropical horticulture, of the University of California at Los Angeles, spoke on "Some Postwar Problems in the Citrus Industry."

At the afternoon session Charles J. Brand spoke on "The Postwar Fertilizer Industry"; Weller Noble on "National Fertilizer Advisory Committee, Present and Postwar"; and M. E. McCollam of the American Potash Institute, Inc., on problems in fertilizer application in California; while Dr. Albert Ulrich of the Division of Plant Nutrition of the College of Agriculture made a report on the plant nutrition work that he has been carrying on, cooperatively, during the past year. John H. Lytle, chairman of the Program Committee, presided at the luncheon session, and Byron Reynolds, President of the Association, presided during the afternoon.

New officers of the California Association for the current year were elected as follows: Ned Lewis, president; E. F. Cunliffe, vice-president; Paul Pauly, secretary; Grover C. Dunford, treasurer; Will R. Forker, executive secretary.

Parker To Be Assistant Chief of Plant Industry Bureau

The appointment of Dr. Frank W. Parker to the position of assistant chief of the Bureau of Plant Industry, Soils and Agricultural Engineering, has been announced by Secretary of Agriculture Wickard.

Formerly head of the Division of Soil and Fertilizer Investigations, Dr. Parker will now direct all the Bureau's research on soils. This includes not only fertilizer investigations but also soil management, soil classification, irrigation and salinity problems, and dry-land management.

Dr. Parker, who came to the Department of Agriculture in 1942, is president of the American Society of Agronomy and past chairman of the Society's Committee on Fertilizers. He is also chairman of the National Joint Committee on Nitrogen Utilization and

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has served as chairman of the Department of Agriculture committee on postwar utilization of synthetic nitrogen plants. Under his leadership, a comprehensive study is now being made of the phosphate needs, production, and resources of the United States.

A native of Hamilton, Ill., Dr. Parker did undergraduate work at the Alabama Polytechnic Institute and received his doctor's degree from the University of Wisconsin in 1921. From 1922 to 1929 he was soil chemist at the Alabama Agricultural Experiment Station, and thereafter served as agronomist in charge of nitrogen fertilizer investigations for the duPont Company. In 1942, before joining the Department's staff, he spent some time working on the fertilizer grade standardization program with the Office of Price Administration.

Dr. Parker has an exceptionally wide acquaintance with the soil and fertilizer problems of the United States and has studied similar problems in Europe. He is the author of numerous publications on soil chemistry, plant nutrition, and fertilizers.

New Sulphate of Ammonia Ceiling for Pacific States

On November 13th, OPA placed uniform ceiling prices at the producer level on all sulphate of ammonia sold to fertilizer manufacturers in the States of California and Arizona. This ceiling is $38 a ton in 100-pound bags, and includes freight charges within a freight zone of $4.53 from Shell Point, Calif. Freight from Shell Point, in excess of $4.53 may be added to the ceiling price. This amounts to a reduction of about $1 per ton on this fertilizer shipped to some points in these States from production points in Utah.

A uniform ceiling for this material when sold to fertilizer manufacturers also was fixed for the States of Washington and Oregon. This ceiling also has been set at $38 a ton in 100-pound bags, but includes freight charges of $7.21 from Utah production points. Freight in excess of $7.21 may be added to the ceiling in these States, OPA said.

Weller Noble Honored

Weller Noble, vice-president of the National Fertilizer Association and general manager of Pacific Guano Company, Berkeley, Calif., was honored by his associates in the mixed fertilizer industry in Southern California on November 8, 1944, by a dinner at the Biltmore Hotel attended by some 20 to 25 of his friends. He was presented with a beautiful bronze plaque mounted on a tablet of leopardwood. The names of the 20 donors and a beautiful bas-relief of one of the historic Sequoias are carved in the bronze. The inscription on the plaque is as follows:

In appreciation of the untiring efforts
and accomplishments of
Weller Noble
in behalf of Southern California Agriculture and the Fertilizer Industry during
World War II.

On a previous occasion the manufacturers in Northern California presented Mr. Noble with a handsome precision Swiss watch as a token of their appreciation.

More Sulphate of Potash Available

Fertilizer manufacturers wishing to convert a portion of their allocated muriate of potash to sulphate of potash will have an opportunity to do so, the War Production Board told members of the Potash Producers Industry Advisory Committee at a recent meeting. Sulphate of potash, now in short supply, is used primarily as fertilizer for tobacco crops in areas east of the Rockies.

WPB officials explained that the Louisville (Ky.) plant of the Rubber Reserve Company, of the Reconstruction Finance Corporation, will substitute potassium chloride for sodium chloride in the production of hydrochloric acid. Potassium sulphate, rather than sodium sulphate (salt cake), is the by-product of this reaction, making up to 3,000 tons a month of potassium sulphate available to the American farmer.

The Committee was in unanimous agreement that all future contracts placed with

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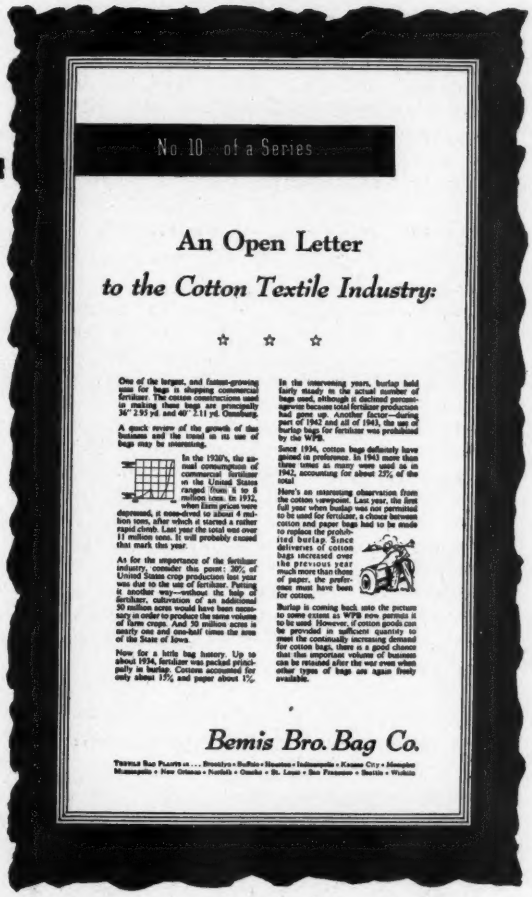
An advertisement, appearing in the leading cotton textile newspaper, told the cotton merchants (1) *about the amazing growth of the essential fertilizer industry,* (2) *the need for bags for fertilizer and* (3) *the types of cotton goods particularly needed.*

The whole object of this unusual undertaking is to create a closer cooperation between the cotton textile and the bag industries . . . *to give you greater assurance of the supply of bags you need.*



No. 10 of a Series

An Open Letter

to the Cotton Textile Industry:

☆ ☆ ☆

One of the largest, and fastest-growing uses for bags is shipping commercial fertilizer. The cotton constructions used in making these bags are principally 36" 2.95 yd. and 40" 2.11 yd. Osnaburg.

A quick review of the growth of the business and the trend in its use of bags may be interesting.

In the 1920's, the annual consumption of commercial fertilizer in the United States ranged from 6 to 8 million tons. In 1932, when farm prices were depressed, it soon dived to about 4 million tons, after which it started a rather rapid climb. Last year the total was over 11 million tons. It will probably exceed that mark this year.

As for the importance of the fertilizer industry, consider this point: 30% of United States crop production last year was due to the use of fertilizer. Putting it another way—without the help of fertilizer, cultivation of an additional 30 million acres would have been necessary in order to produce the same volume of farm crops. And 30 million acres is nearly one and one-half times the area of the State of Iowa.

Now for a little bag history. Up to about 1934, fertilizer was packed principally in burlap. Cottons accounted for only about 15%, and paper about 1%.

In the intervening years, burlap held fairly steady in the actual number of bags used, although it declined percentagewise because total fertilizer production had gone up. Another factor—during part of 1942 and all of 1943, the use of burlap bags for fertilizer was prohibited by the WPB.

Since 1934, cotton bags definitely have gained in preference. In 1943 more than three times as many were used as in 1942, accounting for about 23% of the total

Here's an interesting observation from the cotton viewpoint. Last year, the first full year when burlap was not permitted to be used for fertilizer, a choice between cotton and paper bags had to be made to replace the prohibited burlap. Since deliveries of cotton bags increased over the previous year much more than those of paper, the preference must have been for cotton.

Burlap is coming back into the picture to some extent as WPB now permits it to be used. However, if cotton goods can be provided in sufficient quantity to meet the continually increasing demand for cotton bags, there is a good chance that the important volume of business can be retained after the war even when other types of bags are again freely available.

Bemis Bro. Bag Co.

TEXTILE BAG PLANTS AT . . . Brooklyn • Buffalo • Houston • Indianapolis • Kansas City • Memphis Minneapolis • New Orleans • Norfolk • Omaha • St. Louis • San Francisco • Seattle • Wichita

This is a greatly reduced reproduction of the advertisement to the cotton textile industry, telling how cotton goods are required for bags for fertilizer. Copy will be sent you on request.

BEMIS BRO. BAG CO.

Baltimore • Boston • Brooklyn • Buffalo • Charlotte
Chicago • Denver • Detroit • East Pepperell • Houston
Indianapolis • Kansas City • Los Angeles • Louisville
Memphis • Minneapolis • Mobile • New Orleans • New
York City • Norfolk • Oklahoma City • Omaha • Peoria
St. Helens, Ore. • St. Louis • Salina • Salt Lake City
San Francisco • Seattle • Wichita • Wilmington, Calif.

East Pepperell, Mass.

Rubber Reserve Company for the conversion of muriate of potash should contain the following stipulations: (1) The sulphate produced at the Louisville plant will remain the property of the fertilizer manufacturer. Shipments will be made by the potash producer on an f. o. b. basis. (2) Muriate will be converted into potassium sulphate at a cost to the fertilizer manufacturer of 8 cents per unit of potassium oxide (as sulphate). (3) The potash producer will guarantee that the muriate supplied to the Rubber Reserve Company possesses a minimum content of 60 per cent potassium ozide.

A Rubber Reserve Company representative told the Committee that the following guarantees would be made by the company: (1) Recovery of 97 per cent of the potassium oxide in the muriate. (2) A minimum of 48 per cent of potassium oxide content in the converted potassium sulphate. (3) Maximum chlorine content not to exceed 1 per cent.

Fertilizer manufacturers using sulphate of potash will be notified as soon as this plan is ready to go into effect, WPB said.

U. S. D. A. Predicts Good Farm Year in 1945

In their annual report on the outlook for agriculture during the coming year, the U. S. Department of Agriculture predicts that the total demand for farm products will be almost as high as in 1944. The stability in commodity prices which has existed for the past two years will probably continue. As the national income is likely to be lower than in 1944, it appears likely that there will be a drop of about 5 per cent in cash receipts from farm marketings. Some of the predictions on individual crops are as follows:

Dairy products—demand likely to exceed available supplies.

Fruit—prices probably will be near the high levels of 1944.

Truck crops—sharp drop in non-civilian requirements likely.

Potatoes—prices may be somewhat lower next fall.

Cotton—outlook for next year or two is good, but certain highly important unfavorable factors appear in longer-time outlook.

Tobacco—substantial exports expected in immediate postwar period; increased acreage could be grown in 1945 and likely sold at relatively high prices.

Nitrate of Soda Price Ceiling Raised in Middle Atlantic Cities

Maximum prices for imported nitrate of soda loaded on trucks at warehouses in New York City, Camden, N. J., and Baltimore, Md., have been increased 50 cents per ton, effective November 16, 1944, the Office of Price Administration announced on November 13th.

The present ceiling prices for nitrate at the warehouse in these three ports to which the 50 cents per ton may be added are: $30 per ton in bulk, $33 per ton in 100-pound bags, and $32.40 per ton in 167- or 200-pound bags. The increase applies only to the three ports and will have no effect on retail prices of fertilizer, OPA said.

Nitrate of soda is imported from Chile and is stored in warehouses in various United States ports. Most of it is shipped from these ports to fertilizer manufacturers in carload lots. However, at New York City, Camden and Baltimore it has been customary for some fertilizer manufacturers to take delivery by truck.

The new action, OPA explained, will restore customary business practices in these three ports.

Four Freedoms Listed for American Farmers

P. O. Davis, extension director, Alabama Polytechnic Institute, has outlined "four freedoms for agriculture" as follows:

1. Freedom to produce abundantly enough food, fat, and fiber for a high standard of living for all the American people, plus a fair portion of the needs of other nations. This includes the privilege of continuous improvement in production.

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for the Fertilizer Plant
BATCH MIXERS • PULVERIZERS
SCREENS • BUCKET ELEVATORS
CONTINUOUS AMMONIATING EQUIPMENT
BASING, MIXING & BAGGING UNITS
COMPLETE FERTILIZER PLANTS
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1701 S. HIGHLAND AVE., BALTIMORE, MD.

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SUPPLIES QUICK-ACTING MAGNESIUM

When International Potash is loaded into box cars for shipment to your plant, you can be confident that it will satisfy your requirements for quality and mechanical condition. Two reasons why: the rich quality of the potash ore; and the excellence of its preparation by exclusive processes developed by International's engineers. International Potash will save you time and money in manufacturing fertilizer that will give your customers the results they want.

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Water Soluble
SULPHATE OF POTASH-MAGNESIA
MURIATE OF POTASH
SULPHATE OF POTASH

INTERNATIONAL POTASH

International

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General Offices • 20 North Wacker Drive • Chicago,6
District Sales Offices • 61 Broadway, New York, N. Y. • Chicago • Volunteer Bldg., Atlanta, Ga.

2. Freedom to sell these products at good prices; at prices that will return to farmers satisfactory returns upon their investments and good wages for their intelligence, their skill, and their energy applied to farming.

3. Freedom to buy what they need at prices in keeping with the prices they receive for their products.

4. Freedom to make and maintain and enjoy the kind of home that is typical of our high standard of living and essential to a sound and prosperous economy in America.

Sulphur Production Increasing

Production of sulphur in the United States has increased steadily since January, 1944, and in August reached the highest total attained since July, 1942, according to figures released by the U. S. Bureau of Mines. Output in August was 47 per cent greater than in August, 1943.

Although mine shipments and apparent sales show that consumption is at an all-time high level, in August production finally overtook sales and, after 18 months of steady decline, producers' stocks increased 6,663 long tons.

Period	Production Long Tons	Mine Shipments Long Tons	Producers' Stocks* Long Tons
June, 1944	280,545	311,199	4,168,394
July, 1944	305,064	291,890	4,154,349
August, 1944	306,146	297,168	4,161,012
June, 1943	219,589	268,215	4,917,885
July, 1943	188,913	304,161	4,815,220
August, 1943	208,413	296,710	4,712,125

*Producers' stocks at mines, in transit, and in warehouses at end of period.

November Cotton Report

A United States cotton crop of 12,320,000 bales of 500 pounds gross weight is forecast by the Crop Reporting Board of the United States Department of Agriculture, based upon indications as of November 1st. The present forecast is 367,000 bales or 3.1 per cent above the forecast of 11,953,000 bales on October 1st, and compares with 11,427,000 bales produced in 1943 and 12,455,000 bales for the 10-year (1933–42) average. Lint yield per acre for the United States is computed at 293.3 pounds which yield is well above the previous all-time record yield of 272.4 pounds. Average yield for the 10-year (1933–42) period is 226.9 pounds per acre.

Mild temperatures with very little rainfall during October over most of the Cotton Belt have been almost ideal for maturity and harvest of the cotton crop. Present prospective production is up 100,000 bales from a month ago for Texas, 80,000 each for Mississippi and Arkansas, 50,000 for Alabama and 45,000 for Missouri. For other States present prospects are about the same as a month ago.

All-time record yields are indicated for Virginia, North Carolina, Georgia, Alabama, Mississippi, and Arkansas, and near-record yields for most other States.

Assuming the ratio of cotton lint to cottonseed to be equal to the average for the past five years, production of 5,107,000 tons of cottonseed is indicated.

The report of the Bureau of the Census shows 8,281,571 bales ginned from the crop of 1944 prior to November 1st, compared with 9,062,869 for 1943 and 9,713,354 for 1942.

State	Production (Ginnings) 500 lb. gross wt. Average 1933-1942	1943 crop	bales 1944 crop indicated Nov. 1
		Thousand bales	
Missouri	343	295	380
Virginia	29	24	29
North Carolina	613	596	710
South Carolina	759	696	850
Georgia	997	847	800
Florida	25	16	12
Tennessee	493	491	570
Alabama	1,011	959	1,000
Mississippi	1,609	1,841	2,040
Arkansas	1,314	1,122	1,430
Louisiana	617	739	620
Oklahoma	653	384	660
Texas	3,273	2,823	2,600
New Mexico	108	108	116
Arizona	182	131	135
California	411	341	350
All other	18	14	18
United States	12,455	11,427	12,320

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440 The Woodward Bldg.

Sales Agents:
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155 East 44th St.
New York, N. Y.

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. . . . WHEN BORON IS NEEDED TO CORRECT A DEFICIENCY OF THIS IMPORTANT SECONDARY ELEMENT

Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops.

When Boron deficiencies are found, follow the recommendations of local County Agents or State Experiment Stations.

Information and references available on request.

AMERICAN POTASH & CHEMICAL CORPORATION
122 East 42nd ST., NEW YORK CITY
Pioneer Producers of Muriate of Potash in America

See Page 4

AMMONIUM NITRATE FERTILIZERS FROM GOVERNMENT AMMONIA PLANTS

(Continued from page 10)

necessity of holding a Federal Explosives License.

It is true, of course, that the treatment with dolomitic limestone reduces the nitrogen content of pure ammonium nitrate. While material treated by the PRP plus K method contains approximately 32.5 per cent N, Cal-Nitro is mainly known in two grades, one containing 20.5 per cent N and the other 16 per cent N. It may be that the aim to introduce more concentrated fertilizers in order to save freight was the primary reason why in the recent ammonium nitrate investigations more attention has not been given to the Cal-Nitro process. However, comparative investigations of the various production processes reveal that the lower nitrogen content of Cal-Nitro is only one of the many points which have to be considered and that, if all pertinent factors are taken into account, the costs under the Cal-Nitro method compare favorably with the costs of the other processes.

In order to compare the relative costs of the various products, the author made layouts of plants for the production of ammonium nitrate in prills treated by the PRP plus K method, which material contains 32.5 per cent N, of the "krystal" product, which also contains 32.5 per cent N, and of Cal-Nitro 20.5 per cent N, basing these layouts on the same underlying conditions and assuming in each case a plant capacity of 300 tons of 100 per cent ammonium nitrate per day (equivalent to approximately 38,000 tons N per year), with unit sizes as large as suggested by the standard equipment available and other technical circumstances. Three months' storage has been provided in all cases. In preparing these layouts and in undertaking the pertinent calculations, the expenses incurred in producing the anhydrous ammonia and the nitric acid to be used for making the ammonium nitrate were excluded and no allowance was made for possible royalties, sales expenses and general overhead charges.

For all products the same storage and handling costs have been assumed although it is evident that the storage costs for the prills and for the krystal product are higher,

TABLE I

SUMMARY OF GRAINING COSTS OF VARIOUS TYPES OF AMMONIUM NITRATE FERTILIZERS

	Prills 32.5% N with 1% PRP and 4% K		Krystal 32.5% N with 1% PRP and 3% K		Cal-Nitro 20.5% N		Cal-Nitro* 25.5% N		Cal-Nitro* 30.5% N	
Costs:	Ton of Prod.	Ton of N	Ton of Prod.	Ton of N	Ton of Prod.	Ton of N	Ton of Prod.	Ton of N	Ton of Prod.	Ton of N
Operation and supervision	1.32	.....	1.61	.....	1.17	.....	1.29	.....	1.45	.....
Dolomite at $2.50 per ton	.....	.....	.....	.....	1.00	.....	0.67	.....	0.36	.....
Coating	1.95	.....	1.62	.....	.....	.....	.....	.....	.....	.....
Interest and Depreciation (12%)	0.93	.....	1.27	.....	0.70	.....	0.80	.....	1.13	.....
Total cost in bulk, f. o. b.	4.20	12.90	4.50	13.80	2.87	14.00	2.76	10.82	2.94	9.65
Bagging	3.00	.....	3.00	.....	3.00	.....	3.00	.....	3.00	.....
Total cost in bags f. o. b.	7.20	22.15	7.50	23.00	5.87	28.60	5.76	22.60	5.94	19.48
Total cost in bulk, freight $3.00	7.20	22.15	7.50	23.08	5.87	28.60	5.76	22.60	5.94	19.48
Total cost in bulk, freight 4.00	8.20	25.23	8.50	26.15	6.87	33.60	6.76	26.50	6.94	22.75
Total cost in bulk, freight 4.50	8.70	26.77	9.00	27.69	7.37	36.00	7.26	28.50	7.44	24.39
Total cost in bags, freight $3.00	10.20	31.35	10.50	32.30	8.87	43.27	8.76	34.35	8.94	29.30
Total cost in bags, freight 4.00	11.20	34.40	11.50	35.40	9.87	48.15	9.76	38.27	9.94	32.60
Total cost in bags, freight 4.50	11.70	35.90	12.00	36.90	10.37	50.58	10.26	40.24	10.44	34.20

*These are products which are not manufactured at the present time and which have not been marketed in the United States.

SULPHATE OF AMMONIA AMMONIA LIQUOR
NITROGEN PRODUCTS, INC.
630 Fifth Avenue—Radio City NEW YORK 20, N. Y.
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inasmuch as these products have to be stored in bags whereas Cal-Nitro can be stored in bulk.

The calculations under discussion are given in Table I.

Analysis of Costs

This tabulation shows that up to the end of the actual production process (see line 5 of the tabulation) the costs of making prills, the krystal product, or Cal-Nitro 20.5 per cent do not greatly differ (the cost per ton of N is $12.90 for the prills, $13.80 for the krystal product and $14.00 for Cal-Nitro 20.5 per cent).

The subsequent lines of the table, which show the costs of the three processes after bagging and/or freight expenses have been added, give higher figures for Cal-Nitro. However, the explosive hazard of ammonium nitrate in the form of prills and of the krystal product, even when coated, is considered such that shipments of these materials in bulk are not generally recommended. Therefore, one should compare the costs given in the table at various freight levels for Cal-Nitro in bulk (lines 8 to 10 of the table) with the corresponding costs given in lines 11 to 13 for the prills and the krystal product in bags. If this is done, the cost of Cal-Nitro 20.5 per cent is practically always somewhat lower than that of the other two products. This comparison refers, of course, only to that part of the total consumption which is to be shipped in bulk for use in fertilizer mixtures.

If the comparison is extended to Cal-Nitro types containing 25.5 per cent or 30.5 per cent N, the right-hand columns of the table show that these two products, which incidentally can be manufactured in the same equipment as is used for Cal-Nitro 20.5 per cent, can be delivered, at least within a freight range of $4.50 per ton or of about 450 miles, at a lower cost than the other two types not only in bulk, but in bags. Although these two grades of Cal-Nitro have not yet been on the market, it can reasonably be assumed that the 25.5 per cent grade would be equally free from caking and from fire or explosion hazard as the 20.5 per cent grade; the same assumption is justified for the 30.5 per cent grade with respect to caking. Regarding the explosion and fire hazard of this grade, adequate information is so far lacking.

The higher concentration is under all circumstances advantageous, of course, for an ammonium nitrate fertilizer to be used for making mixtures. With respect to material intended for direct application the situation is, however, significantly different and will be so at least for a number of years. Farmers are accustomed to the use for direct application of fertilizer materials containing only 16 to 20 per cent N and the distributing implements available on the farms, as a rule, are little suited for handling materials with a higher analysis. Thus it must be expected that an ammonium nitrate containing more than about 20 per cent N will meet with considerable resistance on the part of farmers and that a number of years will be needed for overcoming this resistance.

In the cost comparison the value to the farmer of the dolomitic limestone in Cal-Nitro has not been taken into consideration. This value is in most cases equivalent to from $1.20 to $1.60 per ton of Cal-Nitro. The dolomitic limestone provides the farmer with part of the lime which he needs for neutralizing the soil acidity whenever that is necessary. Under the tenant farm system in effect in a large part of the country, regular liming of the soil is often omitted and for this reason the content of limestone in the fertilizer is of great value for the national economy.

Nitrogen Increases Oat Yield

Results obtained over a 17-year period at the Delta Branch Station, Stoneville, Miss., show that for each pound of nitrogen applied to oats an increase of slightly over one bushel was produced. A 45-pound rate has produced the largest increased yield, and consequently the largest profit at present prices. On an 8-year test spring applications of sodium nitrate and ammonium sulphate were superior to fall applications, although the differences in yield for cyanamid were slight.

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This list contains representative concerns in the Commercial Fertilizer Industry, Including fertilizer manufacturers, machinery and equipment manufacturers, dealers in and manufacturers of commercial fertilizer materials and supplies, brokers, chemists, etc.
For Alphabetical List of Advertisers, see page 33.

AMMONIA—Anhydrous and Liquor
Barrett Division, The, Allied Chemical & Dye Corp., New York City.
DuPont de Nemours & Co., E. I., Wilmington, Del.
Hydrocarbon Products Co., New York City.
Nitrogen Products, Inc., New York City

AMMONIUM NITRATE SOLUTIONS
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American Cyanamid Co., New York City.
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A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the Advertisers, see page 33

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Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Utility Works, The, East Point, Ga.

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Stedman's Foundry and Mach. Works, Aurora, Ind.
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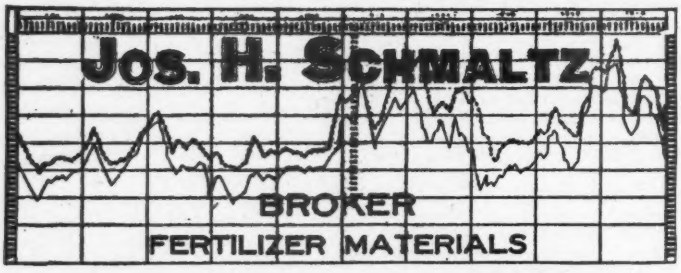

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